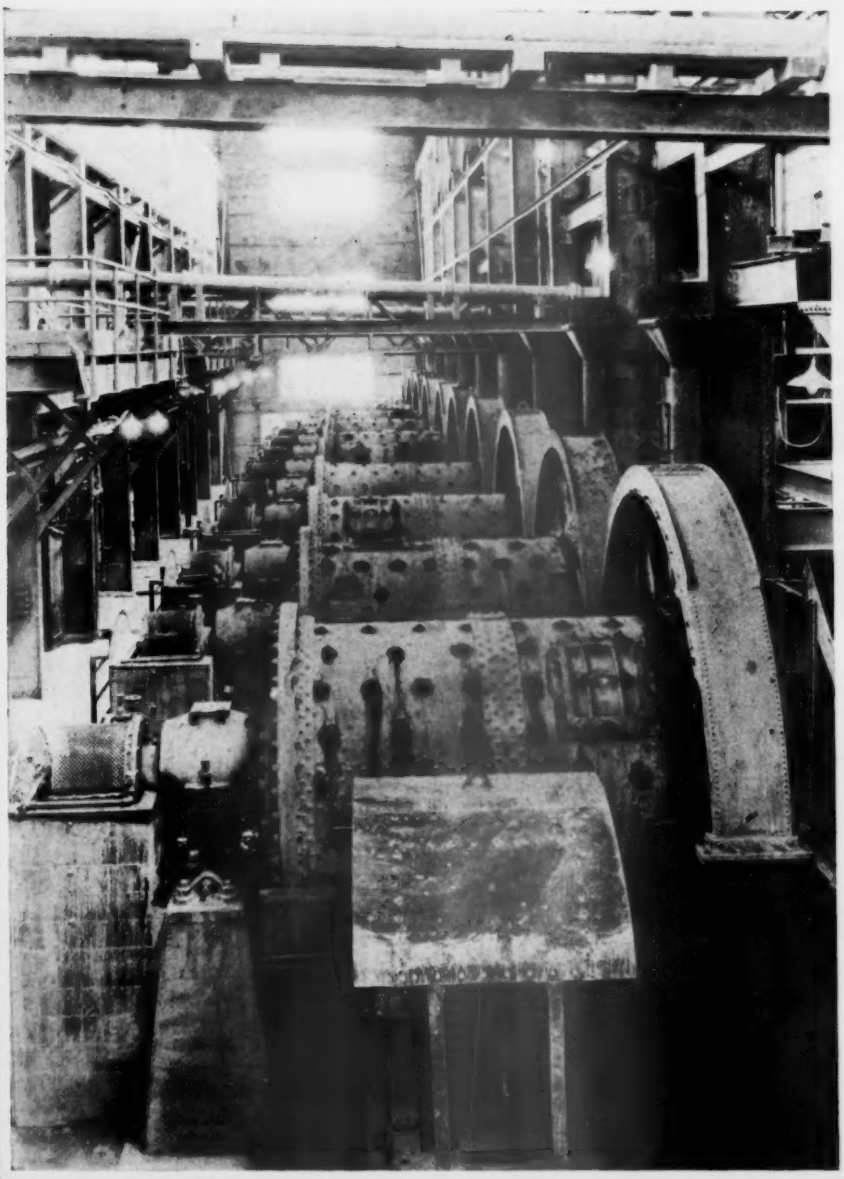
The MINING CONGRESS JOURNAL



OCTOBER

1932

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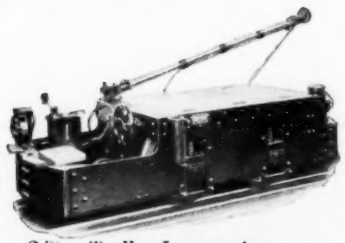

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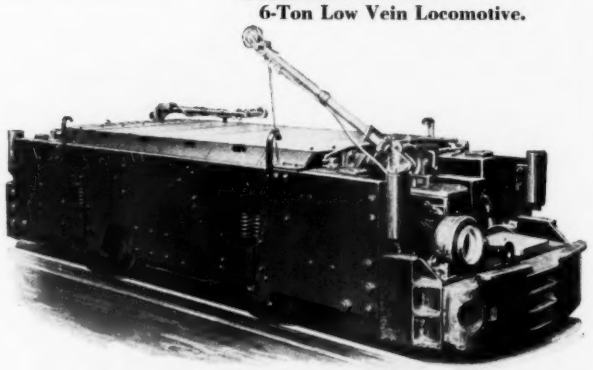

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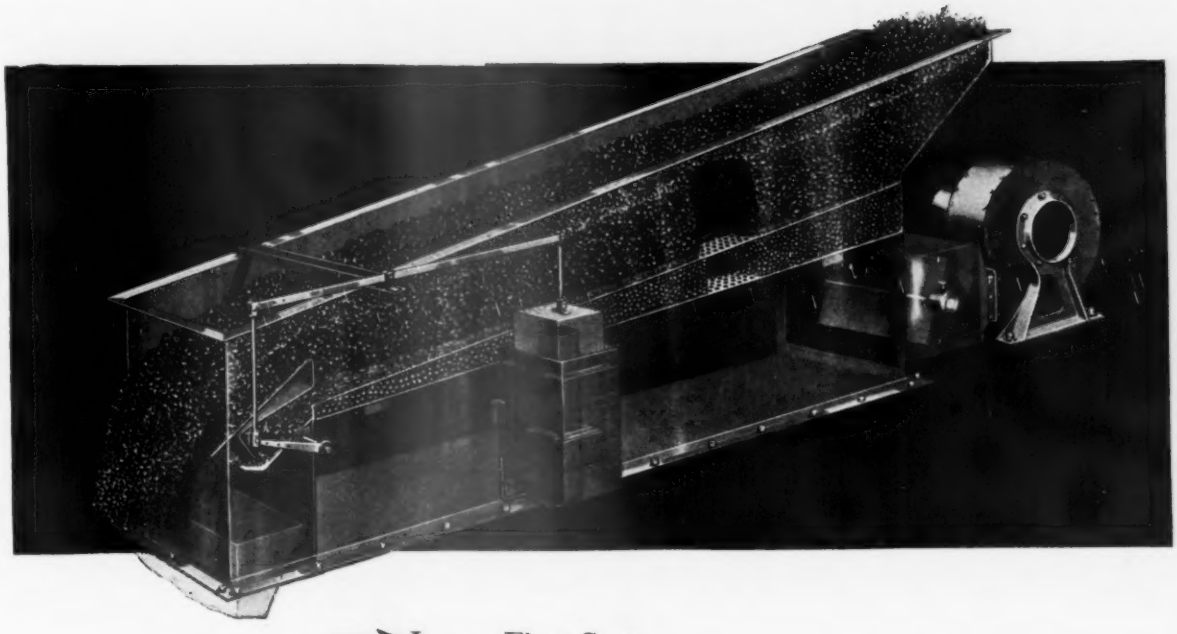

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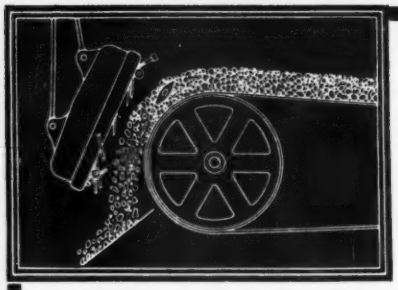

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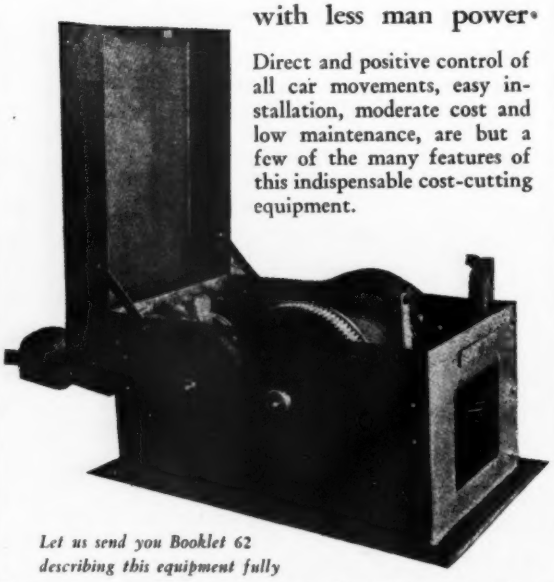

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THE MINING CONGRESS JOURNAL

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Editor
NEWELL G. ALFORD
Associate Editor
FRANK B. COOK
Art Director
PARKER COTT
Field Representative
FRANK W. MORAN
Field Representative

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THE MINING CONGRESS JOURNAL

A Journal for the entire mining industry
published by The American Mining Congress

Wage Levels and Prices

NO PROBLEM confronting the American people is more difficult of proper and humane solution than the relation between wages and price levels. We have been going through a period almost revolutionary in its character. Great fortunes have been wiped away and there has been much of suffering because of unemployment. Enormous waste has followed the inability of industrial enterprises to keep employed the millions of men who rely upon wages for their livelihood. The wage loss of ten million men at three dollars per day amounts to three-fourths of a billion dollars monthly or nine billions yearly—more than double our nation's gold supply. For many years the writer has contended that the growing price level could not possibly be maintained unless there could be either a very large increase in gold production or a larger use of silver as an aid to gold as a money metal by which the amount of real money in existence would be more nearly adequate to the requirements of business conditions.

Falling price levels always entail hardship. Heretofore, during crises of this sort, accumulated wealth has been able to increase its holdings, absorbing a large part of the losses sustained by falling price levels. In the present disturbances the very reverse is true, fortunes running into millions have been dissipated and only those prudent people who have done business on a cash basis are able to survive the cataclysm which has engulfed both the very wealthy and the very poor. There seems at this time no reasonable prospect that prices will again reach the high levels of the period immediately preceding 1929. The consumer who cheerfully paid 70 cents for butter and 50 cents for eggs is now able to buy similar products for 25 cents and 15 cents. Eggs and butter are two of the stable articles upon which the farmer depends for the payment of wages. No argument can prove that the farmer can pay the same wage for the production of 25-cent butter as he was able to pay when his butter sold for 70 cents. The factory worker is now able to provide the largest part of his living cost at approximately one-half of former prices, his food supply and clothing at one-third, and his rentals at two-thirds of the former level. Upon this basis the wage earner who is employed can be, with a smaller income, as well off as before. Wages must bear a proper relation to the selling price of its production. We have frequently advanced the idea that a proper wage is an amount which will enable a prudent industrious man to earn enough to care for his family, educate his children, and to accumulate during his working years enough money to protect his old age against want without recourse to pensions or charity. The man who wastes his surplus or who is unwilling to work should pay the penalty which comes to him who is forced to accept charity and be supported by funds earned by more industrious individuals who accumulate and pay taxes. Another fact which is obvious is that the major part of all money paid for commodities goes in one form or another to labor. Capital as a whole receives less than 5 percent of the total earnings of industry. It is safe to say that at least 90 percent of what we pay for any kind of service or supplies is paid in some form as wages. It follows that price levels must bear a proper relation to the wages paid. It follows also that if any particular part of the cost of service through the various lines of production, fabrication or distribution of products is wasted that some other branch of service must receive less than its fair earning. It will be well if these principles shall be considered by those who insist that wage scales shall not be reduced and that until such time as the world's money medium shall be able continuously to support a higher price level that all elements of production shall consent to the lower schedule in order that justice may be done to both producer and consumer.

The MINING CONGRESS JOURNAL

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Editorials

Forty-Three State Legislatures

THERE seems to be no way in which we can escape a deluge of law-making in 1933. In addition to our national Congress, which promises considerable grief, 43 state legislatures will be in session. Every mining state in the Union will hold regularly scheduled sessions, and there is every likelihood that many will be called, in addition, to special sessions. During the current year many legislatures have been called into extra session, and the subject of taxation has invariably been a special topic for consideration. There is every reason to believe that 1933 will mark all kinds of proposals, good and bad, in the matter of taxation, state and national. Politicians are being hammered from every angle to bring about a reduction in the cost of government. The legislatures will have many new men—men who have been elected to office on promise of action in the matters of taxation and cost reduction.

The cost of government must be borne by someone, and with everyone protesting that "it should not be me," it looks as if the legislators are in for as bad a period as industry. Nevertheless, the possibilities are excellent for constructive legislation, the removal from our statutes of discriminatory taxation, and the substitution of sound methods. The mining industry is a basic industry; it furnishes the livelihood for thousands of citizens; it is the basis of tax revenue in practically every state. If the legislators, both in the national Congress and in the state legislatures, are given the facts, the mining industry may be able to survive the attack of "legislativeitis" and come through in a much healthier state than now exists.

Government Competition With Business

THE Shannon Committee has issued its preliminary report on its investigation of the Government's competitive enterprises with business. It is a formidable indictment, although the committee announces that it has scarcely scratched the surface and can not possibly complete its investigation in time to make its full and final report to Congress in December, 1932. It seems that the Government is competitive with practically everything from the envelope business up to the express services. Two of the largest express companies recently announced that unless Uncle Sam revised his parcel post rates they would be compelled to go out of business.

The National Association of Manufacturers recently informed the Shannon Committee that "unless Congress either limits or returns federal manufacturing activities to private interests, we shall inevitably establish within our Government the functions and objectives of a socialistic commonwealth." Among the industries affected by Government competition are shipbuilding, arms and ammunitions, oil and varnish, the fertilizer industry, office equipment and foundries.

Gradually, at the request of small organized groups, the Government has gone into greater and greater competition with industry. Not until the cost for such expansion became too heavy for all the people to carry has the protest against it become audible. The investigations now under way will go far to clarify public opinion on this evil, and the ultimate result will unquestionably put an end to a situation that has caused serious alarm among those who have been aware of it.

"I Want Work"

THERE is no denying the fact that there are millions of men in our midst who "want work" and who are unable to get it. The ringing cry of William Green, president of the American Federation of Labor, that "labor wants work" lost some of its appeal when he followed it with the statement that "we shall protest and oppose wage reductions wherever imposed."

With strenuous efforts being made all along the line to bring about a sharing of employment, the five-day week, the six-hour day, it is scarcely constructive for the leader of the laboring man to announce a policy of opposition to efforts designed to put labor back to work.

The first wage reduction in industry did not start with the laboring man. It started with the salaried employe. As long as two years ago the salaried man took a decrease in his earnings of from 25 percent to more than 50 percent. One large industrial unit reduced the earnings of its key men 52 percent in a little more than a year. Its labor has not yet been reduced, except as it has been forced to lay men off because of lack of business.

A solvent business is represented by many things, all of which must spell profit. Capital can no more work for no wage than can the workers. When profits cease, business ceases. The costs of raw materials are down. Particularly is this true in mining. Copper, for instance, is at the lowest level in its history. Will anyone suggest that with its product reduced to 5.25, that it can pay the wages, or employ the number of men, it could when it was getting 17 cents for its product? No one has taken a greater earning reduction than industry itself.

Labor, as well as the rest of us, must accept the situation. And the way to revive high wage scales with increased employment is not by arbitrary stands but through cooperative effort. Business is just as anxious to employ men as men are to be employed. But they can not do so at wages that prevent them surviving.

Depletion— Gross Income— The Property

by **A. W. Dickinson***

ON JUNE 6, 1932, at 5 p. m., the Revenue Act of 1932 was approved containing a provision for percentage depletion for coal and metal mines and sulphur. This provision under Section 114 (b) (4) reads in part:

> "The allowance for depletion shall be, in the case of coal mines, 5 percentum, in the case of metal mines, 15 percentum, and in the case of sulphur mines or deposits, 23 percentum, of the gross income from the property during the taxable year."

It is generally understood that gross income is the amount of money received for, or the value of the marketable or shipping product of, a natural resource enterprise. The production of coal or ore, of metals or non-metals is carried on from the prospecting and discovery stages with the sole objective of developing and bringing into being a marketable shipping product of value. This value is the gross income.

The whole conduct of mining enterprise is a selective procedure. It most commonly happens that in the selection of a deposit of mineral for production many other deposits are discarded or eliminated from consideration in the desire and plan to operate only such a property as will present the best opportunity for the final winning of a marketable product.

After the selection of the deposit of the mineral is made plans are carefully developed with a view to selecting the coal, ore or mineral to be taken from its place in the earth. Mining men do not take the entire content of the land to which they have claim or title. Coal lies in beds of varying thickness and pitch, and ores and minerals are found in veins and other forms of deposit. The material contemplated in the plan and sought in the selective process of winning to the use of mankind is the marketable material. Thus much of the content of the deposit is discarded in the very method pursued in the working or winning. In coal mining, top or bottom coal or both are frequently left in place. In many instances there is a center band or bed which is cut out and wasted in order that the coal sent to surface may be of a marketable quality. In metal mining the drifts, crosscuts and even shafts change course in the procedure of selecting the ore or mineral which will furnish a marketable product.

There is further the selection practiced in the loading of coal and ore when impurities and waste materials are cast out by hand, hand shovel and mechanical device. From the room, breast, stope, or open pit the coal or ore then proceeds to market, the selective handling continuing en route, until the evolution of mining brings out a product which has value, a product which someone will buy—a MARKETABLE SHIPPING PRODUCT. The further selection accomplished by screens, washing, smelting and refining is contiguous to, and a step in, the production of a marketable natural resource product by mining. Without each of these steps, from prospecting to the marketable product, deposits of mineral could not and would not be won and all of the practices from the prospecting drill, rock breaking, coal cutting and loading down to the electrolytic vat are vital to the fruition of a mining enterprise in evolving a marketable product which can be disposed of by the taxpayer.

The individual or group conducting a mining business receives no money until disposal is made of a marketable product. This money is then used to pay for labor, powder, machinery, supplies, taxes and miscellaneous needs. The remainder of the money received for the sale of the marketable product, IF ANY, is the net; the objective of the entire venture from prospecting to disposal. In determining the "gross income from the property" from which the percentage depletion was authorized, Congress could have had in mind no other conclusion than that the money received from the sale of the marketable product was such gross income and that the Congress and its advisers so intended when Section 114 (b) (4) of the Revenue Act of 1932 was written and enacted into law.

* Staff, The American Mining Congress.

Have You Heard?

PRESIDENT HOOVER announces his unalterable opposition to the payment of the bonus, saying that the payment at this time would be a calamity to the 21,000,000 families not included in the veterans' ranks, who would have to pay the sum asked. . . . Says he is President of All the People and as such cannot approve favor to any one faction.

JAMES M. BECK, in his "Wonderland of Bureaucracy," says "Remarkable as is the genius of a federal bureau for immortality, it is as nothing to its fecundity. . . . A bureau may have a small beginning, but it is like the modest shad—it has within it roe from which an indefinite progeny can be spawned."

SPECIAL DISPATCH to Wall Street Journal, from Birmingham, Ala., states that "more canning and preserving of fruits and vegetables in coal and ore mining camps, to provide food for winter months for unemployed families, is reported than any year heretofore."

A NON-PARTISAN COMMISSION, to study railroad problems, is proposed, backed by National Association of Mutual Savings Banks, insurance companies, etc., according to announcement by Associated Press. . . . Calvin Coolidge and other national figures likely to become members.

AMERICAN FEDERATION OF LABOR announces a nation-wide radio campaign against "corrupt unions." They charge that 28 national labor groups are in hands of gangsters, radicals and crooked politicians. . . . Will hold a mass meeting in Chicago where they assert conditions are bad.

PRESIDENT HOOVER will present complete plan for reorganization of entire federal government set-up. Bureau of Budget is instructed to set up staff to make necessary investigations and prepare executive orders to carry out its recommendations. . . . Under present law, reorganization will be effected through executive order, which must be sent to Congress where, if not acted upon within 60 days, becomes operative.

100,000 MEN are actually working on federal buildings now under construction, and 300,000 additional are working in fabricating and material plants, according to F. K. Heath, Assistant, Secretary of Treasury. . . . 90 percent of public works coming within scope of present plan, will be under contract by June 30, 1933.

A. W. ROBERTSON, Chairman of the National Committee on Industrial Rehabilitation, and Chairman of the Board, Westinghouse E. & M. Co., outlines plans for intensive equipment modernization movement throughout industry. . . . The committee plans to put back on payroll a million and a half workers now out of employment in factories manufacturing machinery, equipment and plant facilities.

WALTER C. TEAGLE, President, Standard Oil Company of New Jersey, is head of a "Share-The-Work" movement, which will start its campaign early in October. At a special organization meeting held recently, the heads of practically every large industrial group were present, and pledge support of the movement.

JOHN HAYS HAMMOND, well known Engineer, in an address before the Babson Institute, declared that the silver question is one which has not been adequately brought to the consideration of the public. . . . He proposed an organization to include cotton and textile manufacturers, automobile makers, oil producers, and others, which would conduct a campaign of education.

TREASURY DEPARTMENT reports that postal deficit in present fiscal year is now approximately $5,000,000 in excess of deficit in corresponding period of last year. . . . This despite increase in postal rates. . . . Deficit as of September 8, is reported as $30,078,597.56.

ACCORDING TO LEAGUE OF NATIONS the value of world trade fell $25,000,000,000 from 1929 to 1931, and if present conditions continue this may be increased by $10,000,000,000 additional before the end of the year.

VAST IRON ORE DEPOSITS are announced as discovered in western Siberia. . . . About one-third of deposit or 200,000,000 tons is near surface, and ore content is 40 to 60 percent.

PRESIDENT HOOVER addresses urgent plea for generous charity in this our "last winter of the great calamity." . . . Major desire is to see that no man or woman goes cold or hungry. . . . Urges support of organized charities and individual generosity in helping local situations.

INDIANA MINERS, represented by District 11, United Mine Workers of America, have voted to adopt a three-year wage contract, proposed by the Indiana operators, calling for a 25 percent reduction in pay.

ORDER FOR 50,000 TONS of rolled steel, placed by Soviet Government with one concern, and with prospects of additional orders, is the latest development in Soviet-Polish trade, according to our trade commissioner, at Warsaw, Poland.

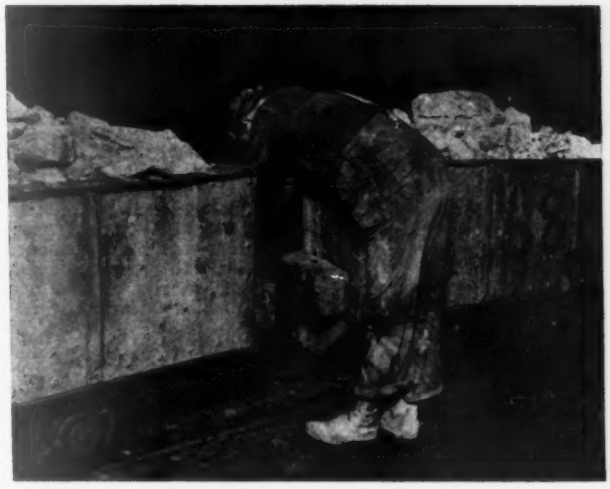
ACCORDING TO JOHN L. LEWIS, President United Mine Workers, there is a "growing belief among nation's leaders that the only way to bring back prosperity is to buy it back." He argues that wage rates which compel workmen to do without necessities of life cannot produce prosperity. . . . States that organized labor is asking for shorter day and week, creation of national economic council, and enactment of a national industrial code.

FARM, LABOR AND TRADE leaders have been invited to cooperate with Alfred P. Sloan, Jr., President General Motors Corporation, and a nation-wide committee of 76 leaders, in a study of war debts, and their resulting problems.

ACCORDING TO OFFICIALS from the Illinois coal fields, sufficient number of coal mines are running to take care of present demand and anticipated demand for next month. . . . Approximately 26,000 miners are at work in southern Illinois fields. . . . Strike continues in Springfield, Taylorville, Peoria district. . . . Union officials are said to be "doing all they can" to get the men back at work, under the new $5.00 a day wage scale.

Safety Action*

by **F. S. Crawford**†



THOSE WHO HAVE attended safety meetings have listened to many appeals to act safely. In some ways it seems foolish that men must be aroused to the need of working safely. This is true, nevertheless. After this feeling has been aroused in a man his mind formulates a few ideas on safety and then the next thing he does is to take some safety action. First of all, however, the man's feeling was aroused, his thoughts were stimulated, and he found that he must really think about every detail of his work to discover where he could improve it and where the dangers lay; but what started him in the right direction was the conviction that it is not only a fine, desirable thing to work safely and without accidents, but that it is also a necessity.

By appealing first to the feelings as to the desirability of working safely, inspiring speakers try to get men started along the right way. If a man can be started right, with much interest in safety, he will go far before his enthusiasm runs down.

Importance of Safety

Safety is the most important thing in the worker's life. He should gradually generate a steam pressure, well backed up by the fire of interest and fed by the fuel of safety information so that he may build up a pressure that will last steady throughout his lifetime. If a man has his so-called steam pressure and will remember to keep a governor on it, he can depend upon it to develop the right kind of safety action all his life. To keep up this pressure it is necessary for him to maintain a steady interest in all things applied to safety. This will supply him with a continuous flow of the fuel of safety information for his fires of interest. Let the worker be first convinced that safety in every way is the most desirable thing in the world from every point of view, and he will become a lifelong safety man at both work and play.

Self-Preservation

There is absolutely no question that safety is the one really most important thing in the life of every person, not excepting anyone. Which of us would be here today if it were not for that instinct which is always on the look-out for danger—the instinct of self-preservation? It is only when people become so despondent that they are mentally deranged that this instinct is put to sleep. This despondency may occur also as a result of bad health or of wrong conditions at home. Keep up the health first of all and the misunderstandings which occur at home are not so likely to happen. As long as the mind is normal the instinct of self-preservation is certain to exist.

Savings

The instinct toward safety is again shown by the general desire to save something for a rainy day, or a hard winter, or against the possible chance of being laid off. No matter how little a man may be earning when he is employed full time, if he sees no immediate prospect of bettering his condition, his instinct for self-preservation or for safety tells him to save something for possible hard times. Under present economic conditions those men who have heeded this safety instinct are now making inroads upon these savings if their hours of work have been cut down or if they have been laid off altogether. The precaution of saving is a hard thing for most men to keep in the front of their minds if they have been working steadily. There are so many influences at work to relieve them of their savings, substituting for them something that they do not absolutely need, but which they want to make their families more comfortable.

Many prominent men of this country said before the present depression started that prosperity was financed by the spendings of the people, and people were urged to keep up their spending for prosperity. No one needed to be urged to spend for the things which were absolutely necessary to him. This was a case where the natural safety instincts were lulled into semiconsciousness; if people did actually follow this advice to be patriotic and spend for prosperity all of their incomes, they were merely helping to bring on an unsafe condition where they had no savings to fall back on if times became worse or they lost their jobs. Thus, the word "savings" and safety are closely connected. We keep savings in a safe place; that is safety.

Religion

Probably the most important connection that safety has with the lives of most people is the religious one. Every man has a religion. He may be Protestant, Roman Catholic, Hebrew, Mohammedan, Buddhist, or he may call himself a Christian Scientist, an agnostic, or an atheist. Even a positive statement that a man has no religion is a kind of religion in itself. One of the fundamental ideas in most religions is the saving of the soul. Regardless of what is meant when we say we want to be sure our souls are saved the main idea is that we want to be safe—we want to be saved. Religion and safety thus mean much the same thing in regard to spiritual things.

When the facts are faced squarely the best reason for any man to be an advocate of safety is the entirely selfish one of self-preservation and the preservation of his family. Everyone likes to think, however, that he is not entirely selfish, and the higher and nobler reason for any person to pursue safety action is that he can prevent other people from getting hurt, as well as himself, and to help his fellow men and families to retain their happiness.

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† District Engineer, U. S. Bureau of Mines Safety Station, Duluth, Minn.

Frequency of Accidents

Even with the constantly increasing interest in the prevention of accidents there are entirely too many of them. It is admitted that progress has been made in various industries—in some much more than in others. Men who are working for an organized industry are easier to reach in safety work than is the general public. This is, of course, true in safety work as in any other educational program which has to do with the general public. For example, automobile accidents have become so frequent and so costly in some states that the insurance companies operating in them have been compelled to raise their rates. If everybody would drive safely and give the other fellow the right-of-way, no matter whether it was his according to the rules of the road or not, there would certainly be fewer automobile accidents and the cost of such accident insurance would drop instead of rise.

Hazards in the Home

Another great source of accidents is in the home. We must realize, of course, that "the home" means where people live. It represents the largest number of people and the greatest exposure to accidents, but should not represent the greatest exposure to hazards. There are, however, numerous accidents such as falling downstairs, or in the bathtub, or from a chair, accidents from electricity (these are also common in bathrooms), suffocation from gas leaks as well as from incomplete combustion of gas, and accidents from numerous other causes. As our present-day homes become fitted with modern conveniences, hazards are introduced into them which they did not have formerly, such as that of electricity; these conveniences are probably not so well installed in the average house as they are in the up-to-date industrial plant. It is a big problem to bring the subject of safety to the large majority of the people in their homes so that they will go about their ordinary household duties safely.

Self-Direction in Safety

Of course, the big difference between one person and another is the mind. Commonly this is called the brain, but the brain is merely the tool which is used by the mind to direct the activities. All persons are not built alike and they do not all work under conditions which stimulate their brains in the same way. Some people have better brains than others, just as one carpenter may have a sharper saw or hatchet than another one has. It is not entirely a man's fault that he has good brains, however; he was born that way, or at least with the capacity for developing a good brain. What he makes of his life, however, depends upon the advantage he takes of developing the good brains he inherited. So we are all likely to pursue safety action in different ways, but it really matters little whether a man has a quick brain or a slow brain. If he is convinced that it is first of all the right thing and the best thing for himself and his friends and family to work and act safely at all times, and if he keeps up a steady interest in safety, he will do his share in acting safely according to his abilities. The man who has the better brain is, of course, expected to do more than the man who is not so fortunate. However, the man who is born with a somewhat slower brain, if he has a safety pressure slowly developed in him through his interest in devising ways that he can work the safest, can build up a strong pressure which sooner or later will let him do as much for safety as the brighter fellow.

The big thing and the most important thing is to be "dead in earnest" on this safety question; if the workman is firmly convinced of the desirability of working safely, his interest will be enough to direct him to information as to how he can work more safely. He should ask questions about things he does not know, without being ashamed to say that he does not know them, and should try to find somebody or possibly a book from which he can get the information. The safety engineer or the boss will be glad to help him. The main thing is that the workman should be in earnest and interested in the safety of himself and those working around him, and that he should show this interest by actively trying to change things for the better by all regular means.

Responsibility of Firm Executives

It is the place of an executive, responsible for the success of his business and for the conditions in his plant which affect the safety and health of his employes, to set up an organization or system of organized inquiry into the causes of accidents and unsafe conditions or methods of working about his plant and to see that they are changed for the better.

Good housekeeping about any plant will be almost certain to eliminate many conditions which are directly responsible for serious accidents. Analysis of accidents in many cases shows that some conditions which would not have existed if better housekeeping had prevailed in the plant have caused serious accidents. One such instance, although not an industrial accident, illustrates this point: A man was burning excelsior in the fireplace in his home. Sparks from the chimney ignited the shingle roof. He climbed up a ladder to the roof to put out the fire and in climbing on the roof slipped and fell to the ground, suffering serious injury. The cause of the accident was attributed directly to the fall. However, he would not have been in a position to fall if the roof had not caught fire. The fire was due to a dirty chimney, to the bad practice of burning a large quantity of excelsior in the fireplace, as well as to the fact that he did not have a fireproof roof on the building. All of these factors can be included under the general term "bad housekeeping."

A well-informed executive is aware that even though he may not have a cent of compensation to pay for accidents, and even though in some extraordinary way it might be that men and families would not suffer from the effects of accidents, still it is his duty, as the plant manager, to stop accidents because of their enormous cost in dollars and cents to the operation, entirely aside from compensation and medical bills. As a normal human being, the executive is, of course, first of all interested in preserving his employes whole-limbed and healthy to live a happy, useful life for themselves and for their families.

To make sure that employes suffering injury due to plant hazards will at least have a small amount to live on while they are disabled, the state requires the employer to pay compensation or to take out insurance with a company which will pay it for him. A plant manager, however, discovers that there are numbers of indirect costs from accidents which are likely to average at least four times the direct cost of compensation, and that individual accidents sometimes cost many times the direct cost of compensation. The executive who is anxious to serve his employes to the best of his ability, or, if he owns the business, to keep it in a profitable condition, should get behind the safety movement in his plant and further it by all possible means.

Responsibility of the Superintendent or Foreman

The intelligent superintendent or foreman realizes that his employer's interests are also his own and carries out all the boss's safety program as if he had started it himself. He takes a personal interest in every detail, just as is done by the president of the company. He also makes his own suggestions for the improvement of the general safety program from time to time.

The foreman is responsible directly to the head of the company for the success of the boss's plans, as it is impossible for any one man to see and notice everything. It is up to every foreman not only to keep up but increase his interest in safety in his plant. He will note and remedy as soon as possible any condition or method of working which affects the safety of employes, property, or output of the company. Even the head of the company can not further safety in his own plant if he does not have the wholehearted, thinking, active cooperation, not only of all his superintendents and foremen, but of every man on the pay roll. The foreman, however, is working closest to the ordinary workman and represents to him the authority of the management. It is the place of every foreman then, as a part of his job, to see that his men work safely and receive safety instruction in their jobs in such a manner that they will follow instructions when he is not there to enforce them.

Responsibility of the Workman

In this safety movement the workman has the most at stake. The boss is compelled to consider the cost af accidents. If he does not, the business may fail and the workers will be out of a job. If he does consider the cost af accidents and insists, after all other means have been tried and have failed, to induce the men to work safely, that they must work safely or get off the job, it may mean that in self-defense he must lay off the man who is a danger not only to himself but to his fellow workmen. Such severe discipline is sometimes necessary, and in most cases is the kindest thing the boss can do for the man who is discharged, especially where his continuing or growing carelessness is likely to result in his own serious injury or the serious injury of fellow workmen.

The rank-and-file workman, however, has the most to gain from learning to work safely. He keeps his arms, legs, eyes, and health; he is not a burden to others when he should still be working;

he is able to continue to take care of his family; he continues to be able to carry out his plans for his own and his family's future, which he could not do if he were disabled; there are so many self-evident reasons why safety is most important to the workman that it is a waste of time to state them. However, in probably 90 out of 100 cases some one is directly responsible for an accident; in perhaps 10 out of 100 cases an accident might have been prevented with proper guards in use.

Safety For, Not Safety From, a Hazard

When the slogan "Safety First" was started, many people with the thought of adventure in mind considered safety first as limiting their action—slowing them up, making them look before they leaped, and in many ways serving to keep them from what they felt was a thrilling or brave adventure. Safety should be considered safety *for* and not safety *from;* in other words, safety for completion of the job or the adventure in a satisfactory way rather than safety from any particular danger. If a boy is taught the right way of playing football he can play just as hard as he wants to and probably not get hurt. This is teaching him safety *for* his adventure, and not the negative idea of teaching him safety *from* getting hurt when he is tackled or makes a tackle. It is teaching a person forethought; to be prepared for emergencies, or, better than that, to so prepare himself that the unforeseen will not happen. This was particularly shown by the great adventure successfully completed by Col. Charles A. Lindbergh. He did not just pick up an airplane and after arriving at the take-off point, New York City, suddenly decide he was going to take a trip to Paris; he prepared for the trip for months ahead, and besides having a good plane, equipped it with numerous essential instruments to enable him to navigate successfully.

Surely everyone is convinced of the great importance of safety and is asking what things he can do to be safe. That is much like the question asked of Jesus by his disciples, "Master, what must we do to be saved?" The answer is that safety must be considered first of all, and interest in it must be sincere and continual, both for oneself and for everyone else with whom one works. Prepare to do the job so that it can be completed without accidents. A person who is interested in the correct way of doing his work will miss no opportunity to learn something new about the hazards in his own job or in the rest of the plant, on the street, in automobiles, or in any phase of his daily life.

Varied Industrial Hazards

The employe is probably told many times by men of his company about certain hazards in the operation, but if he can be made genuinely interested in safety he will have little trouble in finding out himself where the dangers are and where accidents are most likely to occur. It is a job for some one working under the direction of the manager to keep an accurate record of every accident, no matter whether it causes an injury to a man or whether it causes damage to property or production. The boss can tell the workman where the particular dangers are about his plant, but it is the right attitude of mind towards safety, not only on the job, but at all times, which prevents accidents.

It is said that you can lead a horse to water but you can not make him drink. During the World War a number of persons called "conscientious objectors" were sent to the writer's regiment by the local draft board. These men objected to war as a matter of principle. The answer to their objection was that "while Uncle Sam could not make them fight, he could take them where the fighting was and then let them use their own judgment." That is all anyone can do in safety work. He can tell a man what the dangers are and by severe discipline, if necessary, try to make him work safely, but if a man is not satisfied in his own mind that safety is of the first importance, that man still remains a hazard both to himself and to the other men who are working with him. No matter in what part of the operation, the manager or the foreman must have the full cooperation of every man, both outwardly and inwardly, or rather mentally, if his job is to be a success. This is never more important than it is in safety work.

For those who are convinced of the need of active thinking about safety and of taking action toward obtaining it, a few suggestions are given in the following pages:

Plant Safety Committees

In every plant, no matter whether it is a small one or a large one, there should be a central safety committee composed of department heads. In some cases it may be advisable to have one workman for each department serving on the committee, provided that this does not make the committee too large. Preferably this committee should meet monthly and discuss the accidents of the previous month and the means of preventing future similar accidents; in the early stages of the safety movement at any plant it may be advisable to meet once a week for several months until all foremen and superintendents have fully grasped what is expected of them. A workman representative is placed on the committee largely for his own education and should be changed frequently until every man in the department has served on the committee.

In a large plant smaller safety committees should be established in each department. The committee should be composed of the head of the department with subordinate bosses, if any, as well as several workmen. The duties of this committee are similar to those of the central safety committee, but their inquiry is confined mainly to the accidents and hazards in their own department. Their duties should be broadened, however, to consideration of the general hazards about the plant. Men serving on such committees should be encouraged to speak freely concerning their ideas for improvements of safety.

Every man should have a reminder from his immediate boss every day of the need for being careful and the need for forethought on his particular job. Special hazards should be pointed out to him daily and a constant effort should be made by both foreman and workman to foresee any hazards or obstacles to the successful completion of the job. This brings safety and successful operation so close together that they can not be considered separately. The main attention of both foreman and workman should be directed to those numerous hazards which can not be entirely eliminated by use of mechanical guards. Their elimination is entirely dependent upon each man's keeping his mind on the job. Experience and accident records have shown that this class of accidents, which can not be overcome by the use of guarding, may amount to as high as 90 percent of the total accidents.

Importance of First-Aid Training

It is of fundamental importance that every man should receive a thorough training in first aid. No one knows just when he may be able to assist in case of an accident, at work or at home, on a picnic, on the street, in the woods, or in an automobile. Those who get only the main essentials out of first-aid training will have accomplished something really worth while. It is of less importance to remember just exactly how a square knot is tied than to tie a knot which will hold the bandage securely in place; it is of less importance to remember the exact method of putting on a bandage as shown by the instructor; his demonstration and the practice of it will remain in the mind to some extent, but the main thing to remember is the general idea of what must be done. After receiving such a course, however, it should be reviewed frequently to increase proficiency and confidence.

The main points in first-aid training are:

First: Avoid infection. In other words, be aseptic. This means to cover cuts or other wounds just as soon as possible with sterile, clean bandages tied firmly in place, to keep germs from gaining entrance to the opening and infecting the wound. Keeping his wound free from infection may often save a man's life or prevent the necessity of amputating his limb. Remember always to have the slightest injury given immediate treatment to avoid infection.

Second: Stop bleeding from an artery at once. This condition is recognizable because the blood is bright red and comes out in spurts. The bleeding may be stopped by applying pressure over an artery where it passes near a bone. If arterial bleeding is not stopped at once, an injured person may bleed to death in a short time.

Third: Learn how to use artificial respiration. This is necessary to start breathing which has been stopped by such accidents as electric shock, gas poisoning, or drowning.

Fourth: Learn to fix broken arms or legs or other bones firmly in splints before attempting to move the man to a hospital.

Fifth: Learn the importance of treating for physical and nervous shock. This means keeping the patient warm, keeping up his circulation by rubbing his limbs toward his heart, and giving him a nonalcoholic stimulant such as aromatic spirits of ammonia if he is conscious, and aromatic spirits of ammonia inhalant if he is unconscious and does not have an injury to the head. In most cases, it means lowering the patient's head so that more blood can get to the brain. In cases of injury to the head this is reversed—the head is raised, and no stimulants are given.

(*Continued on page* 21)

Calculating Remaining-Strength in Lang Lay Hoisting Ropes

by **E. R. Taylor***

IT IS IMPORTANT to know the factor of safety required for a new shaft hoist rope, and this factor should be chosen in accordance with the type of installation being considered, in order that the most economical rope service, with safety, may be obtained.

When to remove such a rope from service, however, opens up an entirely different phase of rope-life. A recent development, by the author, of the series of charts for calculating the remaining metallic-area of *worn* Regular Lay Ropes by a visual inspection has proven a very valuable assistance.

By correlating the remaining area to actual ultimate strength tests of worn ropes from the same installation, it is then possible to approximate the remaining strength of the rope so that it may be removed when the minimum factor of safety is approached.

In this article is presented a similar set of charts for calculating the remaining area of a worn *Lang Lay Rope* from a surface inspection, but before going into the use of these charts it is advisable to review briefly the conditions governing them.

Since the safety of any rope installation eventually depends upon the rope strength at the time of removal, it is important that the operating officials set a minimum strength or factor of safety at which the rope should be removed. In setting this figure, due regard must be given to the class of service, character of duty and usual length of rope-service. Economical service then depends upon obtaining all the service possible from a rope, bearing in mind that the *real measure of safety is that additional length of time the rope will continue to satisfactorily meet the operating conditions.* For this reason it is evident that as this additional time becomes short, a point is reached where the rope should be discarded because the risk involved offsets the economy of any slight additional service.

At the present time the only practical way of determining the remaining strength of a rope is based upon a surface inspection, with particular regard to any marked reduction in the diameter of the rope, degree of abrasion evident on the outside wires, broken outside wires, or evidence of severe corrosion.

The marked reduction in the diameter of a rope may be due to excessive abrasion or corrosion on the outside wires, and it may also be due to excessive corrosion on the inside wires, which is not indicated by a surface examination of the rope. The outside wires of the rope may be thoroughly protected by the lubricant used, but due to lack of penetration, the inside wires, as well as the center, may be seriously deteriorated—this, therefore, would indicate a dangerous condition. A marked reduction in the diameter of a rope should be carefully investigated and its cause definitely determined.

The degree of abrasion will vary with the installation and can be allowed for in calculating the remaining-strength of the rope. Similarly, the effect of the number of broken wires and their distribution in the various strands of the rope can be calculated.

When corrosion is present, however, the remaining-strength can not be calculated with safety, nor is there any reasonable way to judge whether or not the rope is safe for further service, except by the judgment of the inspector who compares it with the condition of other ropes on the same installation; but even this is a doubtful method. Where corrosion is present, all the present methods for estimating the remaining-strength of a wire rope become useless. Therefore, in setting up any definite regulations for the removal of rope it is necessary that corrosion be controlled. Corrosion should be controlled not only because of the additional rope service that will thereby be obtained, but because it is a definite assurance of safety, and makes it possible to judge a rope in use by inspection of its exterior. *Corrosion can be controlled by proper and sufficient lubrication.*

Any system of charts for determining the remaining-strength of a rope must necessarily be based on an average condition, which probably will not be met at every installation. This is only logical when we consider the great variety of conditions under which ropes operate, with the accompanying variation noted in their service. It is possible, however, and in fact necessary to the successful use of inspection data, to build up test results from the particular installation, so that the rope strength may be directly compared with a given basis, such as is presented in this article.

Briefly, the procedure required consists, first, in the compiling of complete inspection data, as suggested by Fig. 2; and second, in the testing of worn samples of rope so as to cover the various factors of internal wear and deterioration, which vary with the specific installation and are not apparent from a surface inspection. As an example of what

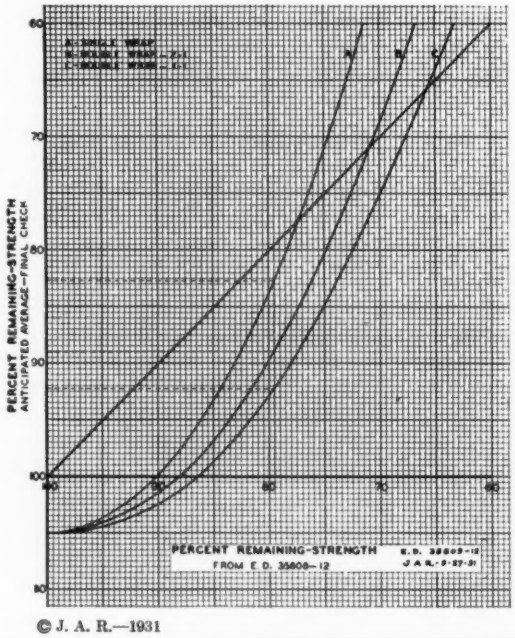

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Fig. 1

Percent Remaining-Strength

As an illustration of what might be expected in plotting the remaining-area effective against the ultimate strength as developed by tests, the chart obtained by testing worn elevator ropes is repeated. It will be observed that the abscissa shows the percent remaining-strength as developed by inspection data. The ordinate shows the anticipated average remaining-strength of the rope. The curves A, B and C represent different classes of service and illustrate why it is necessary to take into account the individual installations. It will be seen that a rope showing 79.5% remaining-strength from inspection data actually has on curve A 82.4% remaining-strength on curve B 89.2% and on curve C 92.2%

* Assistant Chief Engineer, Wire Rope Engineering Department, John A. Roebling's Sons Co., Trenton, N. J.

Fig. 2

Rope Inspection Report

To set up inspection data which can be used as a record, and a guide for subsequent inspections, a suggestive form is shown in Fig. 2. This form, when properly followed, gives an accurate record of the rope condition at all times and provides a means for comparing the service of successive ropes on any particular installation. Particular attention is called to the necessity for keeping rope records complete, as all of the data called for on the sample form is very important in comparing rope service.

ROPE INSPECTION REPORT

(NAME OF COMPANY)

SHAFT NO.	OUR ORDER NO.
ROPE DIA.	MFRS. ORDER NO.
CONSTRUCTION	RECEIVED INSTALLED
MANUFACTURER	CUT AT DRUM
FACTOR OF SAFETY (NEW ROPE)	CUT AT SKIP OR CAGE
MINIMUM FACTOR OF SAFETY (WORN ROPE)	TURNED END FOR END
DRUM (OVER OR UNDERWIND)	REMOVED

	AT ROPE INSTALLATION	AT ROPE REMOVAL
HEAD SHEAVE GROOVE DIA.		
IDLER SHEAVE GROOVE DIA.		

	FROM LEVEL			TOTAL
TOTAL TONNAGE HANDLED				

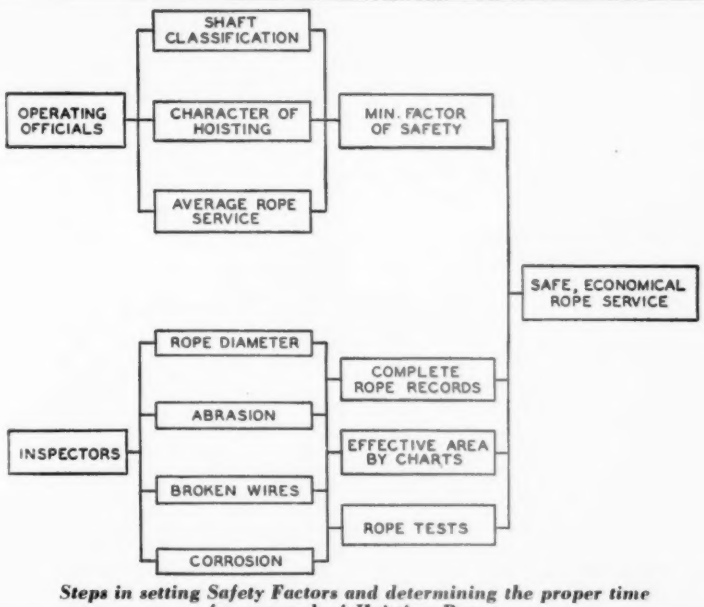
REMARKS

WORST ROPE LAYS OBSERVED

DATE	ROPE DIA.	DISTANCE FROM SKIP	NO. BROKEN WIRES STRAND 1	2	3	4	5	6	TOTAL	AVERAGE WEAR LENGTH	% WIRE DIA. INTACT	EFFECTIVE % ROPE AREA INTACT	OPERATING FACTOR OF SAFETY	REMARKS LUBRICATION, SHEAVES, ETC.

might be expected in plotting these test results against calculated effective areas, we refer to the chart shown in Fig. 1.

The five accompanying alignment charts (*1a* to *5b* inclusive) are presented in order to simplify the calculation of the remaining-area from the inspection data. As in the case of Regular Lay Rope, these charts are based on the observation of the rope's condition in the worst rope lay, a rope lay being the length of rope in which one strand makes one complete revolution about the center. (Fig. 3.) Experience indicates that the examination of such a section should, if it is the worst rope lay, give sufficient information to permit the calculation of the effective remaining-area.



Steps in setting Safety Factors and determining the proper time for removal of Hoisting Ropes.

Charts *1a* and *1b* cover 6x19 Modified Seale Construction, Lang Lay Rope, each of the six strands having one center wire, six large inside wires, six spacer wires, and 12 outside wires.

Charts *2a* and *2b* cover 6x19 Roebling Special Seale Construction, Lang Lay Rope, each of the six strands having one center wire, five large inside wires, five spacer wires, and 10 outside wires.

Charts *3a* and *3b* cover 6x19 Seale Construction, Lang Lay Rope, each of the six strands having one center wire, nine inside wires and nine outside wires.

Charts *4a* and *4b* cover 6x16 Special Seale Construction, Lang Lay Rope, each of the six strands having one center wire, four large inside wires, four spacer wires, and eight outside wires.

Charts *5a* and *5b* cover 6x7 Coarse Laid, Lang Lay Rope, each of the six strands having one center wire and six outside wires.

These charts apply only to Roebling Lang Lay Hoisting Ropes of Blue Center Steel, Plow Steel, Extra Strong Cast Steel, and Cast Steel grades, of the specific construction indicated with each chart.

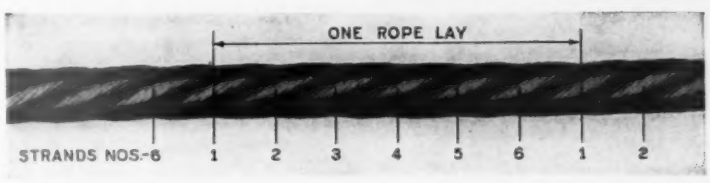
It will be noted that the use of these charts requires two operations, the *a* chart in each case being used in determining the percentage of the outside wire diameter remaining, based on the dimension *Q* as measured on Lang Lay Rope, and the *b* chart being used for combining the wear and the number of broken wires observed in the worst rope lay, thus determining the percentage of the rope area remaining intact.

The first operation is necessary because of the difficulty usually encountered in estimating the depth of wear on a worn rope. Measurement of a number of Lang Lay Ropes indicates that the most satisfactory method of determining this depth of wear on a rope while in service is by means of the dimension *Q* as shown for 6x19 and 6x16 rope in Fig. 4, and for 6x7 rope in Fig. 5.

With a 6x19 or 6x16 rope, the dimension *Q* is obtained by measuring the distance between the closest points of wear on the first and sixth wires in a strand. It will be noted that the points of wear,

Fig. 3

A wire rope lay is that length of a rope in which one strand makes a complete revolution around the center.



between which the measurement is taken, are on opposite sides of the track of wear on the strand, so that the measurement is across the track of wear. As shown in the illustration, the measurement is most easily made with dividers. Particular care should be taken to measure across the proper number of wires, as, otherwise, the charts will be ineffective.

With a 6x7 rope, the dimension *Q* is obtained by measuring the distance between the closest points of wear on the first and fourth wires in a strand. The measurement in this case is also across the track of wear on the strand.

Although it is usually unnecessary to consider uneven distribution of wear, other than to arrive at the average wear, tests show that any uneven distribution of broken wires among the strands is accompanied by an increased reduction in

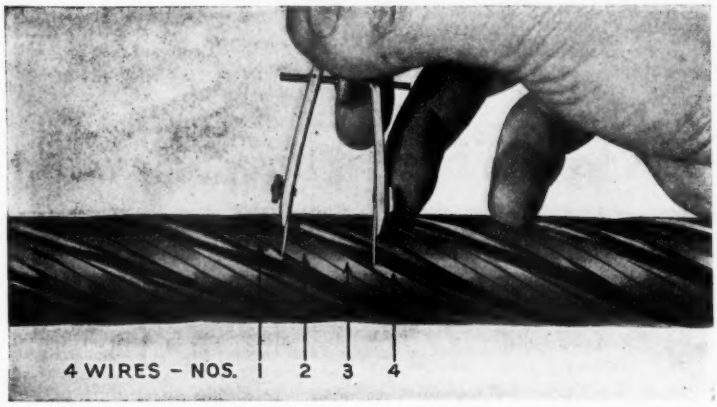


Fig. 5

Determining the depth of wear on 6x7 wire rope by the dimension "Q" which for this construction is measured between the closest points of wear on the first and fourth wires in the strand.

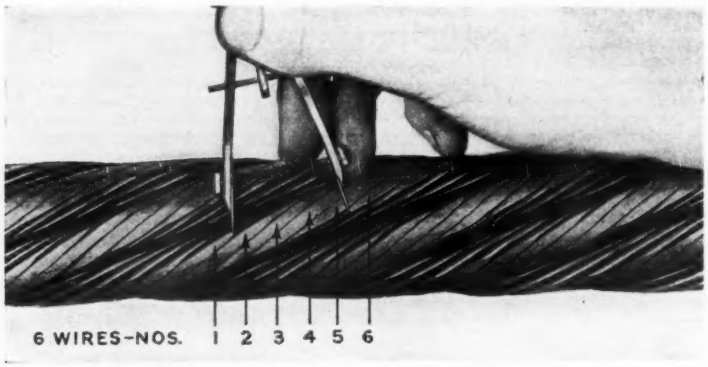


Fig. 4

Determining the depth of wear on 6x19 and 6x16 wire ropes by the dimension "Q" which for these constructions is measured between the closest points of wear on the first and sixth wires in a strand.

rope strength. In order to compensate for this, the percentage rope-area intact, as determined from the previous charts, is referred to chart *2*, which takes into account the distribution of broken wires by strands, so as to determine the effective percentage of rope-area remaining intact.

To illustrate the use of the charts, let us consider a 1¼-in. diameter 6x19 Modified Seale Construction, Lang Lay Rope, an inspection of which shows *Q* equal to 1.6 inches and twenty (20) broken wires in the worst rope lay, distributed as follows:

Strand No. 1—4	Broken	Wires.
Strand No. 2—6	"	"
Strand No. 3—5	"	"
Strand No. 4—4	"	"
Strand No. 5—0	"	"
Strand No. 6—1	"	"
Total.....20	Broken	Wires

Turning to the diagrams for Modified Seale Construction Lang Lay Rope, shown in charts *1a* and *1b*, the projections are indicated for calculating the percentage remaining-area in the above case. On chart *1a*, a line is drawn from the rope diameter on scale *A*, through the dimension *Q* on scale *B*, to intersect scale *C*. This intersection indicates that 81 percent of the outside wire diameter re-

Chart 1a

Depth of Abrasion—6x19 Modified Seale Construction, Lang Lay Rope

EXPLANATION—Draw a line from the rope size on Scale "A," through the dimension "Q" on Scale "B," to intersect Scale "C." At this intersection read the percentage of the outside wire diameter remaining. Use this figure on Scale "D" in Chart 1b.

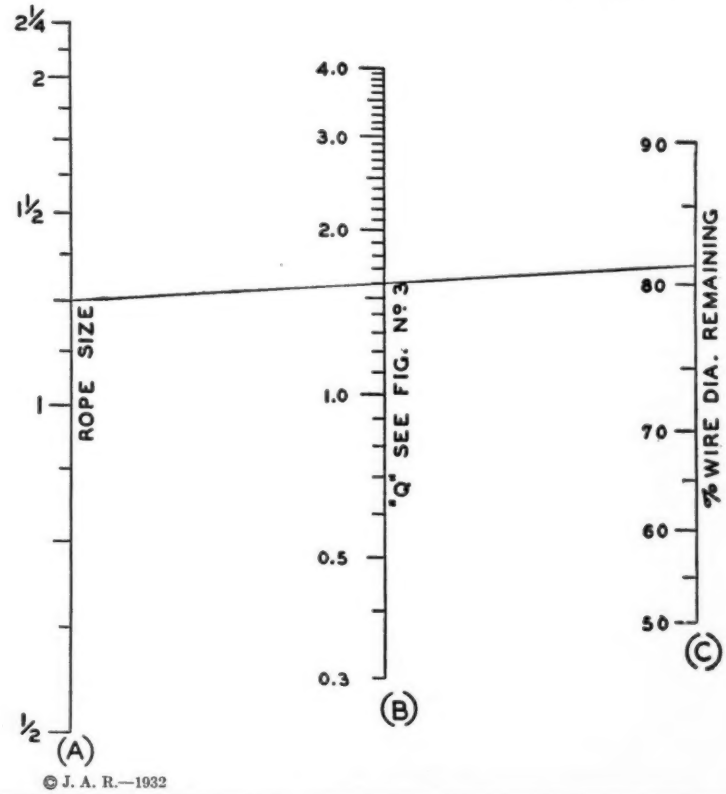


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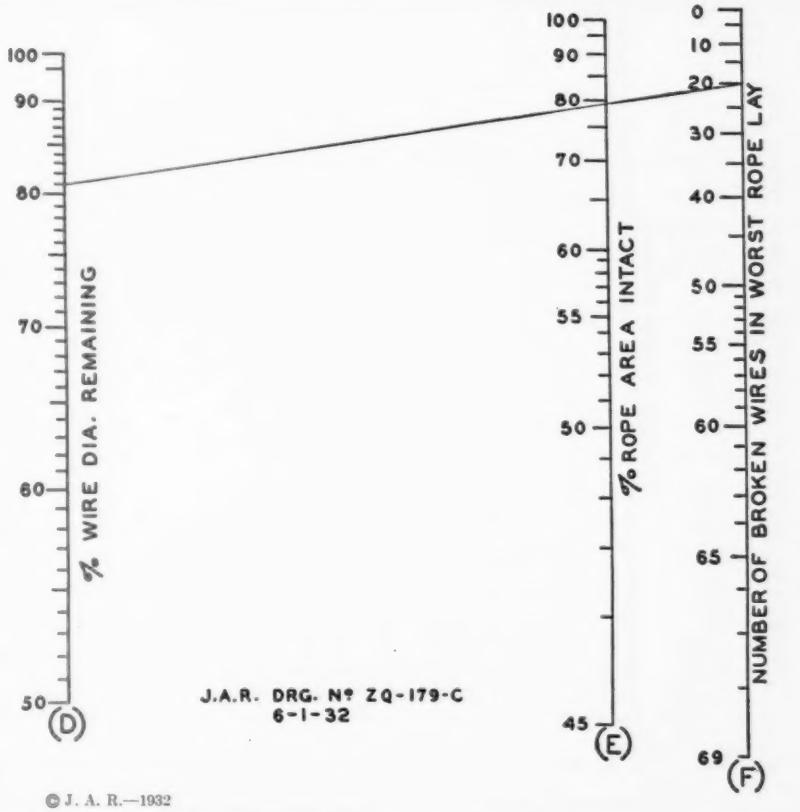
Chart 1b

Percentage Rope-Area Remaining Intact—6x19 Modified Seale Construction, Lang Lay Rope

EXPLANATION—Connect the percentage of the outside wire diameter remaining on Scale "D" to the number of broken wires in the worst rope lay on Scale "F," and read the percentage of the rope-area remaining intact at the intersection on Scale "E." Use this figure on Chart 2.



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mains intact. On chart *1b*, this figure, namely 81 percent, is transferred to the percent-wire-diameter-remaining scale *D*, and a line is drawn from this point to the number of broken wires in the worst rope lay on scale *F*. The intersection of this line with scale *E* indicates that 79 percent of the area of this rope remains intact.

Since the greatest percentage of broken wires in this case occurs in four strands, we refer to chart *6* and find that with 79 percent of the rope-area intact, and the above distribution of broken wires in four strands, the effective percentage of rope-area intact will be 74.4 percent.

In order to convert this figure to the actual percentage of the rope strength remaining intact, it is necessary to consider the effects of deterioriation due to internal wear, which are necessarily based upon the operating conditions at the specific installation. As previously discussed, this factor may be allowed for by making ultimate strength tests on worn ropes removed from the particular installation and assembling the data collected on a chart similar to that shown in Fig. 1. This, then, together with the inspection data, will give an accurate picture of the rope's condition at any time, allowing the inspector to scientifically judge the length of additional safe service which may be expected from the rope.

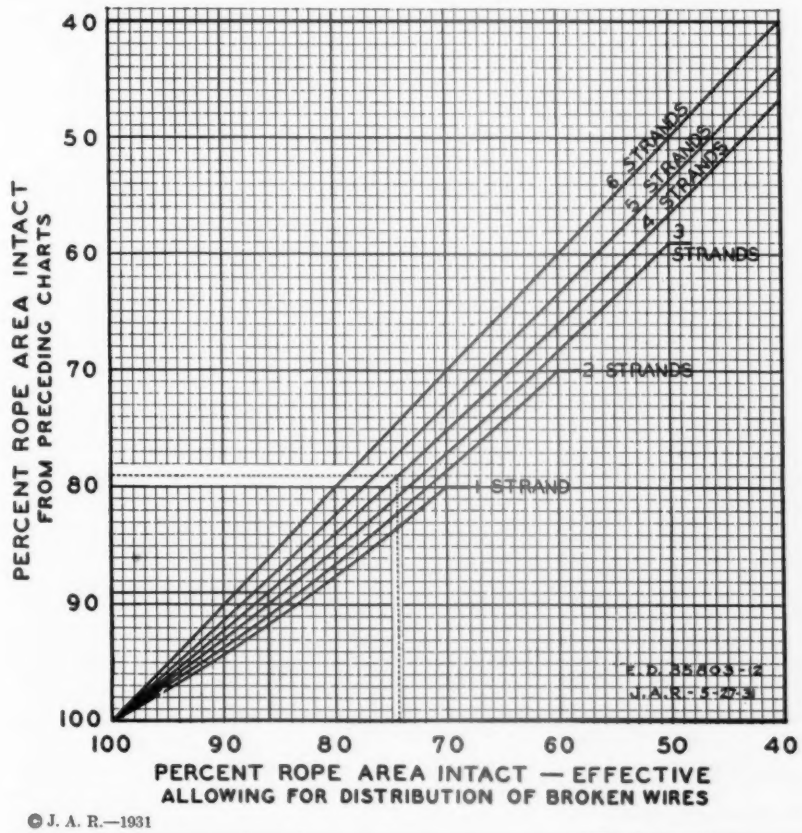

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Chart 2

Affective Area—Distribution of Broken Wires by Strands

EXPLANATION—Select the curve corresponding to the broken wire distribution by strands. Using this curve and the value for percentage rope-area intact, as determined from Scale "E" of the preceding charts, find the value of the effective percentage of rope-area remaining intact.

It is well to point out that when a rope is first placed in service, considerable wear may be noted on the outside wires, but it will be found that this really results in only a slight reduction in metallic area. After more wearing surface is exposed by this initial wear, subsequent abrasion will not be as rapid.

The appearance of broken wires usually occurs later in the rope life and is not necessarily an indication of rapid rope deterioration. However, when broken wires continue to appear rapidly, as indicated by a comparison of inspec-

(*Continued on page 22*)

The Pick and Shovel

by **G. B. Southward**

BACK IN THE DAYS of the little red school house we were made to learn and recite the following lines which a poet wrote perhaps a century ago:

"New occasions teach new duties,
Time makes ancient good uncouth."

Now, it is not the intention of the writer of this article to suggest poetry as a cure for the evils of coal mining—that harassed industry has already had about all the advice and suggestions from the literary world that it is able to stand. And in fairness to the poet who composed these lines let it be said that he did not have coal mining in mind—particularly coal mining in 1932. But at that—for a brief thought to be presented to the coal industry for them to ponder earnestly—he could not have done better if he had tried. Especially if we substitute the more modern word "unprofitable" for "uncouth."

All this is a rather round about way of saying that the pick and shovel which were once good implements for mining coal are now rather out of date and unprofitable, both for the men who use them and the men who hire them. At least other industries consider this to be the case and it is worth mentioning that most of these other industries were highly profitable during the prosperous period of 1923 to 1929, both for the owners and their employes.

SPEAKING OF the pick and shovel and of poetry and literature brings to mind a full-page drawing which appeared a few months ago in one of our leading popular magazines. It related to the much discussed subject of men being thrown out of work by machines. This illustration showed an excavation for the basement foundation of a large city building in which there was a power shovel operated by a small crew of perhaps half a dozen men. The top rim of the excavation was lined with a large crowd of unemployed. The title of this picture was "THE ENEMY"—the obvious inference being if it had not been for the steam shovel these unemployed men would have been at work in the excavation below. Whether this actually would have been the case and whether these idle watchers would have been willing to accept work with the pick, shovel and wheelbarrow is open to argument. But that is not the point. The real question is "was this magazine printed with a linotype machine?" If so, how many more men would the publishing company have employed had they set their type by hand? Having answered this, then why did this magazine not show a picture of a power printing press and entitle that "THE ENEMY"? It would certainly have seemed more consistent but we must not get excited over this because very few people in their criticism of what others are doing are ever consistent.

THE STEAM SHOVEL picture suggests an incident that happened some years ago—back in the days of the pick and shovel. A municipal contractor, who stood in right with the boys at the City Hall and prospered accordingly, was approached by a steam shovel salesman. The contractor listened to his sales talk and finally said, "All you say about the steam shovel is very true—I don't deny it and I believe that one of these machines will, as you claim, do the work of a hundred men. But I am not going to buy a steam shovel because there is one very important thing which it can not do." "What is that?" asked the salesman. "Why," replied the contractor, "at a city election the steam shovel can not vote."

Of course he was right. The steam shovel can not vote. For that matter neither can a coal loading machine pay dues to the union or trade at the company stores. But in the highly unionized coal mines of Illinois and Wyoming, machines have practically replaced hand-loading, so the answer to that must be that the men who operate the machines are earning enough money to pay their union dues. But that still does not tell us what the miners who are working with pick and shovel, for companies which sell coal at around 60 cents per ton, are using for money at the company store.

SIXTY OR SEVENTY cents a ton for run-of-mine coal, as bad as it is, is not the worst. During the past few months many carloads of distress slack shipped to eastern markets on consignment have been purchased for the freight charges. "Purchase" is hardly the right word, although "distress" is. The question naturally arises as to why the coal operator goes to the trouble to load and ship slack if he is to receive nothing for it. Why does he not pile it up on the ground at his mine and set fire to it. He would certainly lose nothing and by taking that much slack off the market he might eventually gain. However, that is his own concern, and if he wants to give his slack away, why this is a free country. Besides, he can cite plenty of precedent—most of the coal industry has been doing this same thing for quite a long time. And where this practice continues, the mines might just as well stick to the pick and shovel. But why continue either one?

A number of centuries ago, just how many is not known, but it was certainly long before coal mining had any problems or had become a problem, a Chinese philosopher wrote this proverb: "Why walk in the ancient ways?" The history of China shows that he did not get his story across. Perhaps he was too indirect in his method, or perhaps the people of that time were able to furnish a satisfactory answer to his question. At any rate, China continued "to walk in the ancient ways" and while they have contributed much to the development of civilization, yet they themselves have not profited by the progress made by other nations.

Getting back to coal mining, we do not want to make a comparison which would be unpopular. Perhaps the Chinese would not like it either. So with charity for all let us simply say that those in the coal industry who expect to rely on the ancient pick and shovel to compete with the modern machine methods of oil, natural gas, improved combustion efficiency and open pit stripping, should not expect to have much more than a Chinaman's chance.

With the MANUFACTURERS

Jeffrey Manufacturing Co., Columbus, Ohio, announce Bulletin 546, on Belt Type Conveyors for Mine Service.

General Electric Co. have recently issued a pamphlet on G-E small a. c. hoist motors, type KR, totally enclosed.

The Falk Corporation, Milwaukee, Wis., announce a complete line of Motoreducers (motor and reducer combined in a single unit) in three different styles, "Integral," "Flexible," and "All-Motor."

Broderick & Bascom Rope Co., St. Louis, Mo., have just released a new broadside, "Take This Tip From Mr. Flex-set," giving some interesting information on wire rope.

The Ensign Bickford Co. has just published a new booklet featuring their detonating fuse, Cordeau-Bickford. It is said to be a text book on the new technique in blasting. Copies are available upon request to their home office, Simsbury, Conn.

Mr. H. H. Elmire, who until recently has been in charge of the New York District office at Arlington, N. J., of the Keystone Driller Co., has been promoted to Field Engineer for the same company, with headquarters at Beaver Falls, Pa.

A new portable belt conveyor, embodying numerous improvements over last year's model, is announced by Link-Belt Co., Philadelphia. Among other features, it incorporates fixed steel retaining sides extending the entire length of the conveyor, thus preventing lumps from splitting over the sides of the belt at any point. To obviate a common source of trouble experienced with portable belt conveyors of this general type, the foot end has been improved to keep material away from the return run of the conveyor belt. Another feature is the new arrangement of the foot end plate, permitting the convenient use of the machine without this plate, when desired, minimizing labor in feeding, and serving to speed up loading. The machine is suitable for the economical loading or unloading of any loose material. Various modifications are possible, such as gas engine operation; omission of truck wheels; suspension of conveyor from a trolley; omission of side plates when handling bagged material, etc.

One of the latest improvements in Hercules explosives, as announced by the company's technical service division, is Hercoal C-1, representing a new and improved permissible coal shooting explosive to take the place of Hercoal C. The new explosive has satisfactorily passed all the Bureau of Mines permissibility tests and is now being placed in the field. It is stated by company officials that it is an even better lump producer and a more economical explosive than the former product. The Hercoal series of explosives, as developed and improved by the Hercules research laboratories, are featured by their high cartridge count, economy, and the cushioned blasting effect obtained without air spacing or compressible stemming, it is stated.

The Linde Air Products Co., 30 East 42d St., New York, N. Y., has introduced a new cylinder truck for distribution by Prest-O-Weld and Purox jobbers east of the Rocky Mountains. This new oxy-acetylene welding accessory, known as the No. 5 Cylinder Truck, should be of considerable interest to welders and to shops in which portable oxy-acetylene welding and cutting equipment is used. This truck greatly increases the ease and convenience of moving the welding or cutting outfit from place to place in the shop or yard and of transporting the outfit to outside jobs. It insures a firm support for the oxygen and acetylene cylinders, eliminating any possibility of overturning them and breaking the regulators or gauges.

The Wellman Engineering Co., Cleveland, Ohio, recently completed the installation of one of their 40 ft. three-hook type clamp, Revolving Car Dumpers at the McGill, Nevada, plant of the Nevada Consolidated Copper Co. This dumper handles cars ranging in size from 9'-8" to 11'-0" high, 9'-0" to 10'-9" wide, up to 38'-0" in length over couplers, the heaviest of which will not exceed a weight of 50,000 lbs. empty car and 100 net tons of ore plus approximately 10 percent overload, or a maximum of 270,000 lbs. at a maximum rate of 30 cars per hour.

Another great advance in the field of transmission belting has just been announced by J. H. Connors, vice president, The B. F. Goodrich Co., Akron, Ohio.

After four years of laboratory and field experiments they announce a new belt and a simple inexpensive outfit that enables plants heretofore unable to use rubber belting an opportunity to reduce their transmission costs by use of this new product and method.

The new belt is named "Highflex Junior." It is built up of a greater number of plies of a specially woven fabric designed primarily to give the proper characteristics so necessary when transmission belting is to be spliced endless right on the machine.

Abel Davis and Franklin H. Fowler, Receivers in Equity for Foote Bros. Gear and Machine Co., announce that arrangements are being made with the approval of the Federal Court to move all manufacturing operations of the company now being carried on at the Curtis Street Plant, to the Plamondon Division at 5301 South Western Avenue, Chicago. At the same time some surplus machinery will be disposed of.

Roberts & Schaefer announce something new in the coal-cleaning field—a small new machine, only 18 in. wide, 40 in. high, and 7 ft. long—the Stump Air Flow Coal Cleaner, developed exclusively by Roberts & Schaefer Co. engineers. It consists of a stationary box in which is an inclined air-distributing and controlling element which causes the coal to be carried along on a cushion of air gently but positively, ridding it of all bone, slate, and other refuse. Air under pressure is furnished in a pulsating current to the resistance element. Another special feature of the Stump Air Flow is the automatic and positive elimination of the refuse by a novel, self-contained control apparatus.

Stump Air-Flow Coal Cleaners can be installed in existing tipples as a part of complete air cleaning plants, or in combination with systems of wet washing, using the water process on coals from nut size to egg, and the Stump Air-Flow process on slack coal.

Full information upon request to the home office, Wrigley Building, Chicago, Ill.

Outlining nine answers to nine competitive questions frequently met by oil burner salesmen, a booklet entitled "This Gas Competition" has just been released by the American Oil Burner Association which includes a formula for computing the comparative operating costs of the two fuels together with some collateral material.

According to data obtained from the preliminary report of the Pennsylvania Bituminous State Department of Mines for 1931, there were 14 coal companies whose yearly production exceeded 1,000,000 tons. The maximum production of any one company was about 10,000,000 tons, and the aggregate production of these 14 companies was more than 43,000,000 tons.

It is significant that the Clearfield Bituminous Coal Corporation, whose operations are all in the thin-bed district of central Pennsylvania, carried off the safety honors for having mined 1,404,000 tons per fatal accident. The nearest competitor had but 898,978 tons per fatality while the average production for the 14 largest coal-producing companies per fatality was 485,940 tons. The Clearfield Bituminous Coal Corporation maintains a low fatality and injury rate, and the company officials and employes credit much of this success to chapters of the Holmes Safety Association established at each of their mines; efficiently conducted monthly meetings are held, supervised by M. Coulter, the company safety engineer. Cooper No. 2, located at Grassflat, Pa., received honorable mention in the 1931 National Safety Competition. This company, its officials, and employes have accepted the safety training service of the United States Bureau of Mines and the training is maintained.—*Holmes Safety Chapter Notes.*

NEWS
of the mining field

Personals—

GEORGE W. CRAFT, formerly general superintendent of Pocahontas Fuel Co., has accepted a position in charge of operations for the Killarney Smokeless Coal Company.

RICE MILLER, vice president Hillsboro Coal Co., has been appointed a member of the Illinois Commerce Commission.

ERLE V. DAVELER, Utah Copper Co. executive, has returned to New York after an extended trip to the properties of his companies, in Utah and Nevada.

THE NEVADA MUTUAL MINING ASSOCIATION has been organized. It is announced that its activities will be statewide, with sections in the various districts of the state.

J. F. CALLBREATH, Secretary The American Mining Congress, has returned to Washington headquarters after an extended western trip in which he visited the principal mining districts, and conferred with the mining men of the various states.

L. S. CATES, Phelps Dodge Corporation, is in Europe.

F. W. BRAGGINS, formerly president of the Lorain Coal & Dock Co., has been elected vice president of the Pursglove Coal Mining Co.

J. O. ELTON has been elected president and managing director of the Rio Tinto Copper Co.

E. H. WELLS, head of the New Mexico School of Mines, has completed a report on the oil and gas resources of New Mexico.

W. B. MONTGOMERY has been appointed assistant to the president of the Colorado Fuel & Iron Co.

LUCIEN EATON has been spending the summer months at his old home, Ishpeming, Mich.

D. D. DODGE has been appointed Vice President in Charge of Operations for W. J. Rainey Co.

W. MONT FERRY discussed the silver situation at the Intermountain Economic Conference held at Colorado Springs, Colo., early in September.

ROBERT E. TALLY, United Verde Copper Co., attended the Intermountain Economic Conference recently held at Colorado Springs, Colo.

J. G. BRADLEY, Elk River Coal & Lumber Co., was one of the principal speakers at the organization meeting of the Ohio Coal Conference.

C. B. HUNTRESS, National Coal Association, told the Ohio Coal Conference that "Service" is the keynote to success, and that retailers, producers and carriers must cooperate to supply public with adequate heating service.

D. INGERSOLL, formerly chief engineer, Pittsburgh Coal Company, has joined the forces of the Penn Anthracite Mining Company in the capacity of general superintendent.

MICHAEL GALLAGHER, president, The Pittson Co., and member of the Anthracite Scale Committee of six operators and six miners now meeting in New York City, was a White House caller on Friday, September 16.

DR. R. C. ALLEN, vice president, Oglebay, Norton & Co., Cleveland, Ohio, was in Washington, D. C., September 2, en route to the headwaters of the Rapidan River.

EUGENE MCAULIFFE, president, Union Pacific Coal Co., has returned to Omaha from Colorado and New Mexico.

ON SEPTEMBER 17, A. G. Mackenzie, secretary of the Utah Chapter of The American Mining Congress, presented the views of that body on silver to Governor Franklin D. Roosevelt in Salt Lake City.

J. PAUL TIMMERMAN, of Lima, Ohio, has been elected president of the Ohio Coal Conference.

M. E. HAWORTH, formerly chief engineer with the Hillman Coal & Coke Company, has resigned and will enter the consulting engineering field, specializing on coal cleaning equipment.

MINERS AND OPERATORS of Indiana have signed a new wage agreement calling for a 25 percent reduction in wages, the new agreement covering a three-year period from the date of the expiration of the old contract, the new contract continuing in force from September 10, 1932, to March 31, 1935. The Indiana rate is lower than that of Illinois.

Regional Sales Agency method of marketing bituminous coal, advanced through Appalachian Coals, Inc., has been declared a violation of the Anti-Trust Laws. It is understood that producers sponsoring this idea will immediately appeal to the Supreme Court of the United States, and that that body will make early decision in the case.

Mineral Production of the United States in 1931

The Bureau of Mines reports that in 1931 the approximate total value of mineral products in the United States was $3,180,000,000, or a drop of 33 percent from the total value of mineral products in 1930. Declines in values, accounted for both by lower unit prices and by the falling off in output of nearly all mineral products, are principally explained by the world depression that affected virtually all lines of industrial activity. The total value of metallic products in 1931 decreased 42 percent, as compared with 1930. Notable decreases in total values, ranging from 44 to 54 percent, were recorded for copper, iron, silver, lead, and zinc, but the value of gold production increased 5 percent. The total value of nonmetallic mineral products in 1931 decreased 31 percent from the preceding year; also, the mineral fuels declined 32 percent.

The following figures give the approximate total value of metallic mineral products and nonmetallic mineral products other than fuel and of mineral fuels produced in the United States in 1931:

APPROXIMATE VALUE OF MINERAL PRODUCTS OF THE UNITED STATES IN 1931

Metallic	$567,200,000
Nonmetallic (other than fuels)	719,700,000
Mineral fuels	1,885,800,000
Unspecified	7,300,000
Total	3,180,000,000

This statistical analysis of the quantity and value of mineral products for the year 1931 summarizes the principal results obtained from the annual canvass of the mineral industries. Pending completion of the more comprehensive commodity surveys, it presents in condensed form—as early as possible—the statistics of output and value. This report is subject only to minor revisions of statistics as may be required by receipt of additional data on the annual canvasses after the preparation of this study.

The Census Report On Coal

The U. S. Bureau of the Census has completed its compilation of statistics on the coal industry for the year 1929. This is now in the process of printing and the publication will be available for distribution in the near future. In the meantime THE MINING CONGRESS JOURNAL is privileged to give to its readers a resume of some of the interesting facts which this report will show.

The complete report contains 27 tables of figures and covers such items as number of mines, tons of coal produced, value of the product, number of wage earners and number of salaried employes. It further shows the amount of money spent during the year for salaries and wages and also for supplies, equipment, fuel and purchased power. This information is given for the total United States, divided between bituminous and anthracite and each of these two major groups is further divided to show these figures for states and, in some cases, counties within the states.

Certain figures taken at random from this report are very interesting. For example there were over one billion dollars spent by the coal industry in operating

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the coal mines—including salaries, wages, supplies and equipment. The per capita consumption of coal in the United States in 1929 was 4.96 tons. This is 0.25 tons less than it was in 1919 and is about at the same level as in 1909. Anthracite and bituminous together have machinery in operation whose aggregate rating is over four million horsepower. In anthracite mining this power rating amounted to 14.1 hp. for every thousand tons of coal produced and 7.2 hp. for each wage earner employed. In bituminous mining the rating of the machines amounted to 5.8 hp. for each thousand tons produced and 6.8 hp. for each wage earner. Both of these figures are marked increases over 1919.

These totals for 1929 are further subdivided in the Census Report by states and counties.

Table "B" is condensed from the report to show the increasing use of power in coal mining during the past twenty years—giving the results of this Census in 1909, 1919, and 1929. In this period the aggregate horsepower, as determined by the rating of the machines installed, increased from less than two million in 1909 to more than four million in 1929. The use of purchased power increased from 26,704 hp. in 1909 to nearly 3,000,000 in 1929. The report of the Census Bureau divides these figures for anthracite and bituminous into states and counties.

Table A

Distribution of Expenditures for Operating Costs in 1929

	Anthracite Amount	%	Bituminous Amount	%	Total U. S. Amount	%
Salaries and wages—						
Principal officers	$854,016	1	$9,998,679	1	$10,852,695	1
Salaried employes	18,481,914	6	38,841,351	5	57,323,265	5
Wage earners	229,967,059	73	574,800,072	74	804,767,131	74
Contract work	6,801,808	2	1,889,627	1	8,691,435	1
Total salaries and wages	$256,104,797	82	$625,529,729	81	$881,634,526	81
Supplies and equipment—						
New machines and equipment	$5,579,720	2	$34,947,424	5	$40,527,144	4
Supplies and materials	37,787,771	12	71,490,972	9	109,278,743	10
Purchased power	6,508,527	2	30,739,381	4	37,247,908	4
Fuel	7,419,721	2	7,529,305	1	14,949,026	1
Total supplies, power and equipment	$57,295,739	18	$144,707,082	19	$202,002,821	19
Total operating expenditures	$313,400,536	100	$770,236,811	100	$1,083,637,347	100

Table B

Horsepower Rating of Equipment in Operation

	1909 Rated hp.	1919 Rated hp.	1929 Rated hp.
Anthracite—			
Prime movers	674,718	782,090	618,042
Motors driven by purchased power	1,410	117,693	423,423
Aggregate horsepower of equipment	676,128	899,783	1,041,465
Bituminous—			
Prime movers	1,202,732	1,383,934	721,687
Motors driven by purchased power	25,294	771,131	2,402,500
Aggregate horsepower of equipment	1,228,026	2,155,065	3,124,187
Total United States—			
Prime movers	1,877,450	2,166,024	1,339,729
Motors driven by purchased power	26,704	888,824	2,825,923
Aggregate horsepower of equipment	1,904,154	3,054,848	4,165,652

The following Table "A" taken from this report shows how the total expenditure of $1,083,637,347 for operating costs is divided between the various items of cost. The expenses for wages and contract work amounted to $813,000,000, which was 75 percent of the total operating cost. The coal mines spent $150,000,000 for supplies, new machines and equipment in that year. This amounted to 14 percent of the total operating cost.

The report also shows the number of mines classified according to the number of hours worked per year, the number of men employed per year and the value of the coal produced. It also shows the total production in each state classified according to the marketing channels, whether delivered direct to consumer through sales agencies, to wholesalers or jobbers or to corporations owned by the coal company.

The bituminous coal industry ranked first in the value of products among the mining industries, its value constituting 40.4 percent of the total value of all minerals produced. Anthracite mining ranked second producing 16.1 percent of all minerals. Anthracite and bituminous combined, therefore, produced approximately 56.5 percent of all minerals mined in this country.

The year 1929 was, of course, a peak year and while these figures do not show the condition existing in the coal industry in 1932 it does indicate what markets can be expected, both for the producer and the manufacturer, when business returns to normal.

SAFETY ACTION

(*Continued from page* 13)

Sixth: Learn to handle an injured person carefully. Examine him carefully to be sure all injuries are known and are given first-aid treatment before the attempt is made to move him to a hospital.

A Common Hazard; Carbon Monoxide Gas

There is one common hazard which should be kept in mind by everyone: carbon monoxide gas. It is present in the manufactured gas in homes and also is produced by the incomplete burning of any other gas or fuel which contains carbon—and carbon is contained in practically everything used for heat, except hydrogen gas. Carbon monoxide is also present in the exhaust gas from an automobile, so that one should not work on a car with the engine running while the garage doors are closed. Keep the doors open.

If anyone is overcome by carbon monoxide gas, get him to fresh air at once and start artificial respiration; send for the doctor and for the fire department oxygen inhaler. The inhaler is an apparatus for feeding the patient oxygen to remove the carbon monoxide rapidly from his blood. It is used only with artificial respiration. Even after breathing starts naturally, feed the oxygen for 15 or 20 minutes or longer until the carbon monoxide is practically all out of the blood. The longer it takes to get the carbon monoxide down to a low percentage the greater the chances are for permanent damage to the brain and nerve cells.

Infection from Cuts and Scratches

The common source of serious trouble has been mentioned: the infection of small cuts and scratches. Be sure to have the slightest pin scratch treated with an antiseptic, such as iodine or mercurochrome, even though it does not

(*Continued on page* 22)

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SAFETY ACTION

(*Continued from page* 21)

look serious enough to be tied up. Any cut where blood is drawn must, of course, have a sterile bandage on it. If iodine is used, do not tie it up, as that may cause a serious burn. The reason for being so extraordinarily cautious with any kind of cut where the skin is broken is that germs appear to be numerous almost everywhere, but probably are more plentiful around industrial plants than they are around the average home. A person may be more likely to get dirt into an injury at work than when he is more inactive at home. A slight injury, no matter how it was gotten, may develop into a serious one and in a short time. An injury no matter how slight should be reported to the foreman, who should see that it receives immediate attention.

Conclusion

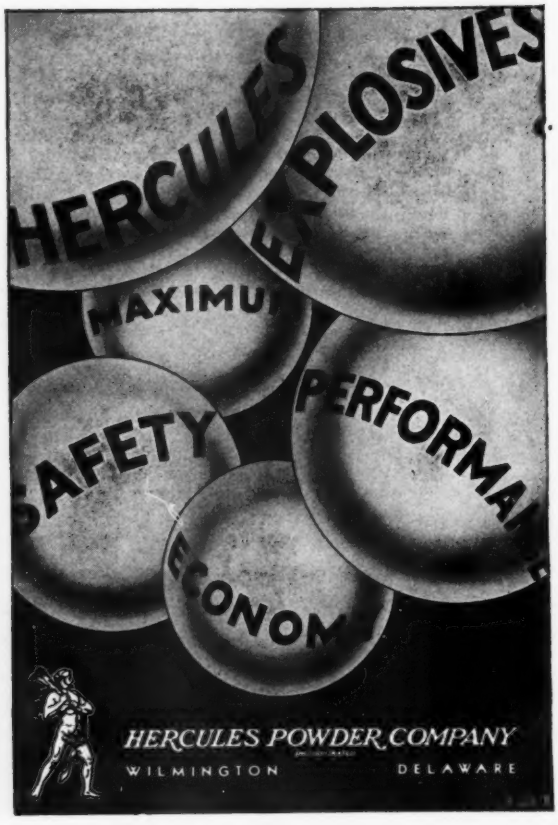
A steady, constant interest in preventing accidents of all kinds should be kept up because they cause the victim and others physical suffering and distress from decreased earnings while away from work when injured. If the workman is not careful to avoid accidents he may lose an arm or a leg or an eye, or be permanently injured, unable to work the remainder of his life. Accidents cause a tremendous loss in money to business and might become so great as to bring ruin and the consequent loss of jobs. For every dollar that accidents cost industry in general, the men working for the plants in this country lose at least an equal amount and probably more. It is to the interest of practically everybody that accidents be stopped. Every man should make himself a committee of one to investigate and report to his boss all the dangerous conditions about his job. The employe may rest assured that the boss will listen and give his suggestion all the attention possible. If in the boss's judgment it is a sound proposal, he will carry it out. The worker should, on his side, take the attitude that it is part of his duty to point out any dangerous practice or condition to his foreman at once. A foreman who is a good safety man will take the suggestion up with the manager or, if it is clearly something that should be acted on at once, will put the safety suggestion into immediate use and report to the manager what he has done, giving the originator full credit for the idea.

LANG LAY ROPES

(*Continued from page* 17)

tion data, the rope as a whole is very likely becoming fatigued so that it is necessary to inspect it more closely, with a view to removal in the near future.

The stretching of a rope is also sometimes taken as an indication of a proper time for removal, on the basis that when a rope loses its elasticity, deterioration is often very rapid. This can not be covered in a general way, but our experience indicates that when this is serious, the condition will be visible from a surface inspection, covering the factors of marked reduction in rope diameter, abrasion, broken wires, and corrosion.



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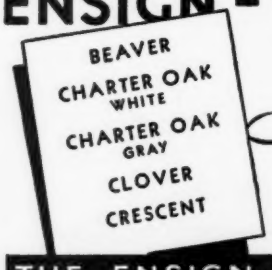

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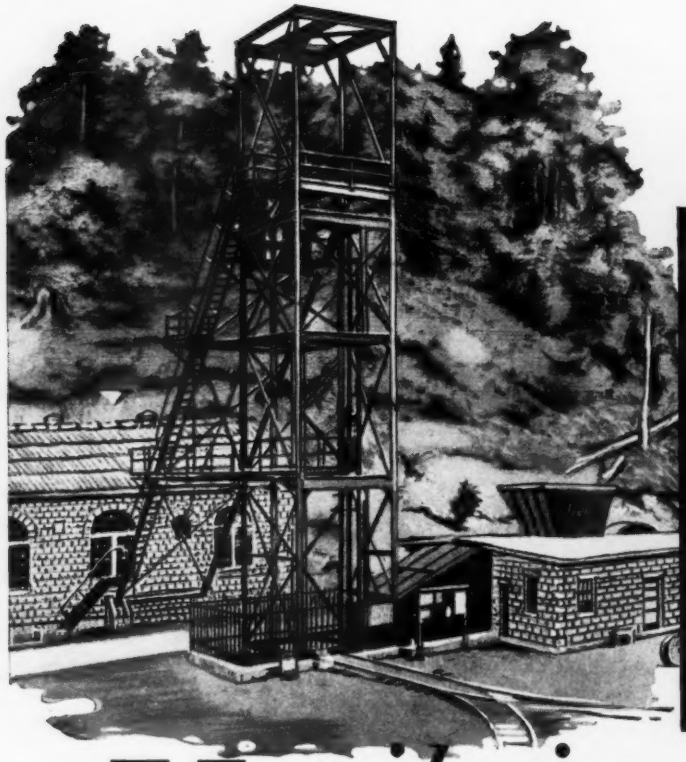

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